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THE COMPOSITION AND DIGESTIBILITY OF PRAIRIE HAY AND OF BUFFALO-GRASS HAY.

By J. T. WILLARD and R. W. CLOTHIER, Kansas State Agricultural College.

Read before the Academy, at Iola, December 31, 1901.

A NUMBER of digestion experiments have been carried out in recent years at the Kansas State Agricultural College Experiment Station, and it seemed that two of these might be of some interest to the Academy, namely, those on prairie hay and buffalo-grass hay. It is well-known that our prairie hay of the eastern part of the state is not in high repute as a feed, and it is even more uniformly true that the short grass of the plains has always been in favor. Even when dead it has served to nourish animals well and bring them through the winter without other feed, when snow did not prevent access to it. Undoubtedly there are great differences among various samples of both the grasses in question and hays made from them, and the results here recorded are not submitted as definitive, but they certainly are suggestive.

The prairie hay used was from the uplands of Riley county, and was regarded as of good quality. No botanical analysis was made of it, but it probably contained a good deal of the little bluestem. It was cut about August 1, 1898, and was prepared for sampling and feeding by running it through an ensilage cutter. After a preliminary feeding of six days to clear the digestive tract of other feed, the test proper began and continued for six days more. Twenty pounds per day were fed, of which about three-fourths were eaten. The animal used was a three-year-old Hereford steer.

The buffalo-grass hay was cut with a lawn-mower in Logan county, during the latter part of July, 1899. It required about ten days' work to get 300 pounds of hay. This was shipped to the station in excellent condition. This hay required no further cutting to prepare it for uniform mixing and sampling. It was fed to a yearling steer, a grade Short-horn. Not being accustomed to this delicacy, our steer refused to eat it at first, and had to be brought to the ration by mixing it with alfalfa and gradually increasing the proportion of the buffalo-grass. In about six days he was on the pure buffalo-grass. He was given a preliminary feeding of five days, followed by five days of the period of exact observation. He was given eighteen pounds per day, and ate about three-fourths of it.

The table following gives the more interesting details of the results. It will be seen that, in respect to the total dry matter, the two hays

are almost identical, but that we have an enormous difference in the amount of protein present and in the digestion coefficient of the protein. Buffalo-grass, in fact, is found to be very much superior to any of the ordinary rough feeds and fodders. It is fully equal to Kentucky blue-grass and but little inferior to red clover.

It should perhaps be stated that the digestion experiments and the analyses were performed in the usual manner, and that in the table, for convenience, certain data are expressed in more than one way. Thus, the pure proteids are a part of the crude protein and the carbohydrates are the sum of the fiber and the nitrogen-free extract.

Composition, coefficients of digestibility and percentages of digestible constituents in prairie hay and buffalo-grass hay.

	Water.	Ash.	Crude pro- tein.	Pure pro- teids.	Fiber.	Nitrogen- free extract.	Carbo- hydrates.	Fat.	Total dry matter.
Composition of the air-dry substances.									
Prairie hay.....	9.07	7.88	3.62	3.62	29.77	47.44	77.21	2.24	90.93
Buffalo-grass hay.....	8.16	12.10	11.31	10.00	24.10	42.33	66.43	2.00	91.84
Coefficients of digestibility, <i>i. e.</i> , the percentage of each constituent that is digestible.									
Prairie hay.....		25.30	17.67	20.91	61.18	61.25	61.07	56.57	51.45
Buffalo-grass hay.....		6.04	54.38	57.70	64.65	61.71	62.75	62.41	50.08
Percentages of digestible constituents in the air-dry substances.									
Prairie hay.....		1.97	0.61	0.74	17.76	29.14	46.90	1.97	51.45
Buffalo-grass hay.....		0.70	6.20	5.88	15.77	26.24	42.01	1.28	50.08